

On a specimen of the pond snail *Lymnaea stagnalis* (L.) with antler-like tentacles

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A specimen of *Lymnaea stagnalis* with abnormal, antler-like tentacles from a laboratory-bred colony was subjected to some experiments on tentacle behaviour. The snail appeared to be normal in all respects. Tactile stimulation of the normal tentacles resulted in normal reactions. Stimulation of the outgrowth of the left tentacle, however, did not cause any reaction whatsoever. This leads to the conclusion that this abnormal part of the tentacle lacked appropriate innervation.

Key words: Gastropoda, Pulmonata, Lymnaeidae, *Lymnaea stagnalis*, teratology.

In the years 1975-1978 I was involved in studies on the interactions between the central and the peripheral nervous systems of the pond snail *Lymnaea stagnalis* (L., 1758) (see Lever, 1978). Part of these studies was a behavioural and physiological investigation of the 'withdrawal reaction' of this snail: the withdrawal into the shell as a reaction upon touch or light-dark stimuli. In particular, the reflex of tentacle contraction, a characteristic component of the withdrawal reaction, was studied (Lever et al., 1977). The experiments were carried out with laboratory-bred animals. All animals had a normal appearance, except one, which had antler-like tentacles.

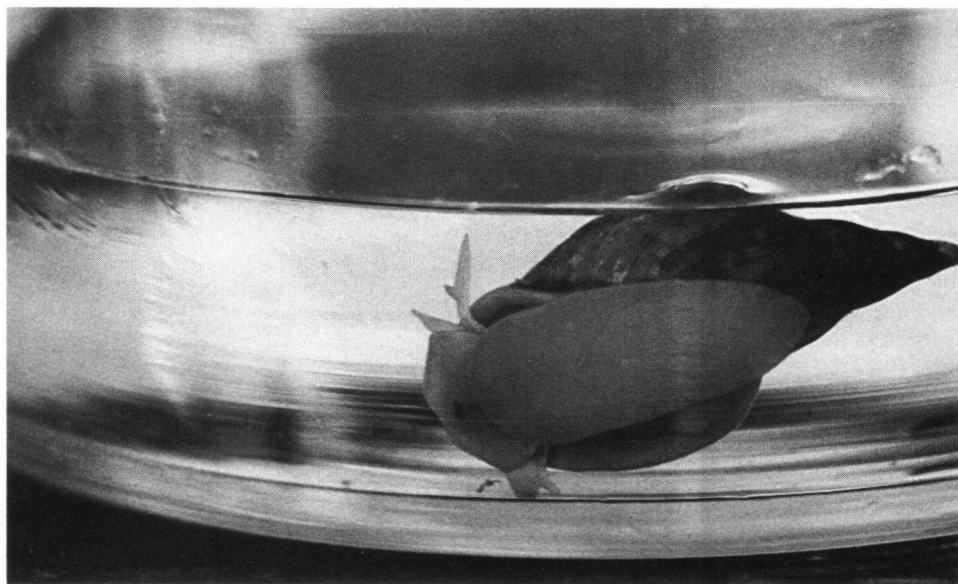
Malformations of snails have been reported upon before. Most reports concern abnormalities of the shell and of the direction of coiling, e.g. sinistrality in dextral species (cf. Lever, 1982, 1984). Less has been published about malformations of the soft parts of snails. The few papers I know all describe abnormal tentacles. Malicky (1964) mentioned a specimen of *Helix pomatia* L., 1758, with fused eye tentacles and Jackiewicz (1969) a *Physa acuta* Draparnaud, 1805, with only one medio-frontal tentacle. Römer (1903a; 1903b) described a specimen of *Helix lutescens* Rossmässler, 1837, in which the large eye tentacles arose from a single central base; moreover the left short lower tentacle had a perpendicular protrusion, pointing inward. A very strange specimen of *Helix pomatia* was reported by Dziabaszewski (1977); in addition to a horn-like uncoiled shell it lacked both tentacles on the left side of the head.

The abnormal specimen of *Lymnaea stagnalis* was studied as regards aspects of morphology and behavioural physiology.

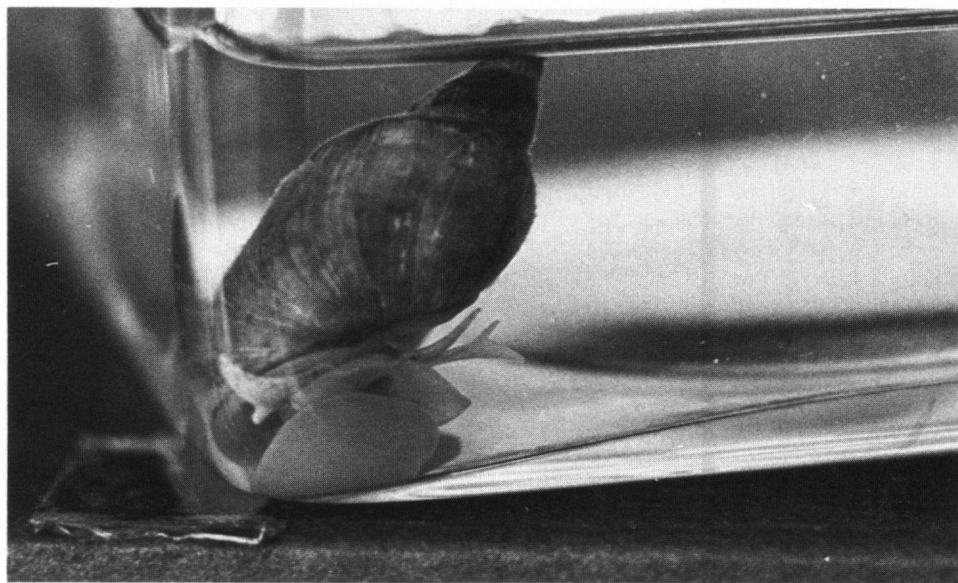
DESCRIPTION OF THE ANIMAL

The animal had a shell height of about 30 mm. All parts of the body were normally shaped with the exception of the tentacles. The right tentacle had a small posterior protrusion near its base (fig. 1). The left tentacle was still more complex. The posterior part of its base had a large tentacle-like protrusion, which secondarily had (about half-

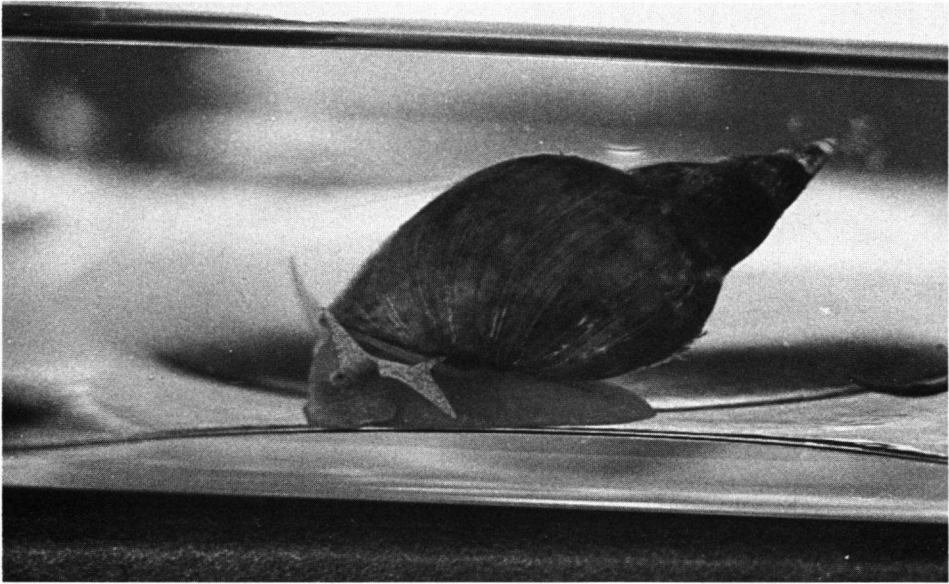
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Figs. 1-3. Specimen of *Lymnaea stagnalis* with antler-like tentacles.

way) a smaller forward protrusion (fig. 2). While creeping, the snail held its tentacles in the normal 'attendance' position. The tentacle-like protrusion of the left tentacle, however, was not actively involved in this behaviour; it seemed to take up only more or less accidental positions (fig. 3).

EXPERIMENTS

The animal formed a challenge for the study of the tentacle behaviour component during the withdrawal reaction. Experiments showed that all reactions and reflexes of the snail were normal. Also, tactile stimulation of the main 'normal' tentacles caused proper reactions. Stimulation of the tentacle-like protrusion of the left tentacle (that of the right tentacle was too small for separate stimulation), however, did not result in any reaction. Even local contractions as a result of stimulation failed to appear.

DISCUSSION

Although all the scarce reports on malformations of soft parts of snails are concerned with anomalies of the tentacles, it is likely that other parts of snails and slugs can be misshapen too. As the tentacles are the most conspicuous external soft parts of the body, anomalies of these structures will be noticed easier than those of other parts. At present there are too few reports for general conclusions.

The experiments on the specimen of *L. stagnalis* demonstrated that the animal reacted normally to tactile stimulation. However, stimulation of the large protrusion of the left tentacle did not cause any reaction. This indicates that this 'extra' tentacle lacked appropriate innervation. It did not function in the overall behaviour of the snail.

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